VOL. IV. No. 4.

Entomological News

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

APRIL, 1893.

EDITOR:
HENRY SKINNER, M. D.
PHILIP P. CALVERT, Associate Editor.

ADVISORY COMMITTEE:
GEO. H. HORN, M.D. CHARLES A. BLAKE.
EZRA T. CRESSON. CHARLES LIEBECK.
Rev. HENRY C. McCOOK, D.D.

PHILADELPHIA:
ENTOMOLOGICAL ROOMS OF
THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

1893.

Entered at the Philadelphia Post Office as Second Class Matter.

BACK VOLUMES

—OF—

ENTOMOLOGICAL NEWS

Those who have not a complete set of **Entomological News** should obtain the wanting volumes **now**, as only a few copies are left over, especially of volume **2**. The prices are as follows:

Volume	I (1890), ...	$1.00 per copy.
"	II (1891), ...	1.50 "
"	III (1892), ...	1.00 "

Address: **E. T. CRESSON, Treasurer, P. O. Box 248, Philadelphia, Pa.**

WANTED

PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF PHILADELPHIA. Vols. I and II; or complete sets—Vols. I-VI.

TRANSACTIONS OF THE AMERICAN ENTOMOLOGICAL SOCIETY. Vols. I, II and III.

☞ **Good prices** given for well-preserved copies of any of the above. Address

GEORGE B. CRESSON,
P. O. Box 248, Philadelphia, Pa.

Entomological Publications.

Classification of Coleoptera of North America, by Drs. LeConte and Horn, 567 pp. 1883 . . . . . $2.50

List of Coleoptera of America N. of Mexico, by S. Henshaw, 1885 . 1.25

First and second Supplements to same, 1887 and 1889, each . . .25

Synopsis of Hymenoptera of America North of Mexico, by E. T. Cresson. Part I, Families and Genera; Part II, Catalogue of Species and Bibliography, 1887 . . . . . 3.00

Check List of Lepidoptera of Boreal Am., by Prof. J. B. Smith, 1891 1.00

Check List of Hemiptera Heteroptera of N. America, by P. R. Uhler, 1886 50

Horn (Dr. G. H.)—Revision of the Tenebrionidæ of America North of Mexico, 152 pp. 2 pl. 4to 6.00

LeConte & Horn.—Rhynchophora of N. America, 455 pp., 1876 . 3.00

Price-Lists may be had on application.

GEORGE B. CRESSON,
P. O. Box 248, Philadelphia, Pa.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. IV. APRIL, 1893. No. 4.

CONTENTS:

Kunze—Autumn collecting of Lepid.... 109
Dyar—A note on the Saturniidæ..... 112
Williston—N. Am. Psychodidæ..... ... 113
Davis—Collection of the Am. Ent. Soc. 115
Meeske—Field Notes..... 116
Snyder—Coleoptera in Fungi..... 118
Smith—Elementary Entomology..... 119
Editorial..... 122
Economic Entomology..... 123
Notes and News..... 126
Entomological Literature..... 129
Entomological Section..... 133
Neumoegen—Descr. of new Sphinx..... 133
Fox—Synopsis of N. A. sp. of Nomia... 134
Davis—A new Ophion..... 135
Holland—African Bombycids..... 136
Neumoegen and Dyar—Lithosiidæ and Arctiidæ..... 138
Fox—Synopsis of N. Am. Melecta..... 143

AUTUMN COLLECTING OF LEPIDOPTERA.

By RICHARD E. KUNZE, M.D., New York.

A sandy shore fringed by a belt of timber, the background of which skirted by undergrowth, shelters many forms of Lepidoptera. A few clearings near fishermen's huts and patches of cultivated ground produced a varied flora. Such is a part of Hudson County, N. J., facing Newark Bay on one side and on the other a line of villages, opposite Staten Island, N. Y. The roads leading to the beach are covered by a yellow sand, attractive only to some insects because of protection it affords to certain forms. A sandy bluff overlooking the bay was carpeted with a low, blue-flowering Aster (*A. multiflorus*), while other taller kinds and a Goldenrod (*Solidago ulmifolia*) grew in abundance on the clearings. Many butterflies were attracted to this sheltered, out-of-the-way locality, and not a few were uncommon.

It was September 25th, 1892, a bright, warm Sunday, when I, with an entomological scholar of mine, did some fine collecting in this locality. Of Heterocera we took a few *Catocalæ* of commoner species, and one of *retecta* from a hickory tree, some *Deiopeia bella*, one *Scepsis fulvicollis* and a few Noctuids I could

not determine. Of Rhopalocera we found feeding on blue and purple Asters, *P. huntera*, *P. atalanta* and *D. archippus*. My young friend started up a *Callidryas eubule* feeding on Golden-rod, and was soon lost sight of between the tops of highest trees. About noon we espied another *eubule* flying above the tops of trees, which shaded the avenue, and it seemed to be heading for Philadelphia, with no time to stop. It was not enchanting to see rarities pass out of view, but in the forepart of October my friend captured four such in his garden in Astoria, L. I., of which more hereafter.

In a clearing of cultivated ground, close to the bay, we found numbers of *Terias lisa*. We had previously taken a few, but here they were at home. In a little while had taken fourteen such, and I soon discovered why they were so plentiful. In the centre of this clearing grew the larval food-plant of *lisa*, the little sensitive pea (*Cassia chamæcrista*), and this accounted for so many of these little beauties. They were easily taken, except when hard chased; then they would rise from their low, jerkety flight or drop suddenly down in among the withered grass and defy detection or any effort to again dislodge them. One *Euptoieta claudia* was secured by my friend on the same field, where a week later I took seven fresh-looking specimens of the same. We also took a few albino ♀ of *Colias philodice* and *Junonia cœnia* came in for a share of the spoils.

After lunching and trying to prevent mosquitoes following suit at our expense, we moved on to other parts of this tongue of land, where a larva hunt was now in order for that of Lepidoptera. The hot afternoon was well spent in finding larvæ of Limacodidæ, Saturniidæ and Sphingidæ. The Ichneumonids had gotten in some of their fine work on many of the larger Saturnians.

A week following I revisited the same locality alone, and a stiff breeze blowing from the southwest nearly all day prevented butterflies from coming to the open field. I saw and took only one *T. lisa*. In place thereof *Euptoieta claudia* put in a welcome appearance, which sought the violet-blue flowers of that little dwarfed Aster, growing on a bluff overhanging the water's edge. They had a habit of spreading out both wings while resting on these azure flowers sunning themselves, or to prevent the wind from lifting them off their feet I don't know which. When disturbed or to evade pursuit, they would sometimes drop upon the

bare, sandy road, where, with closed wings, they very nearly resembled in color that of the buff colored surface, and were not easily seen. A still greater protection was afforded when *claudia* alighted on the now Autumn-tinted leaves of Five-finger (*Potentilla canadensis*), the colors of which was the counterpart of its own underside of both pairs of wings. I had the greatest difficulty to locate *claudia*, when it flew for protection to *Cinquefoil* —a perfect mimicry. When feeding on blue Asters it became an easy victim.

I must now record the taking of *C. eubule* by my young scholar of Astoria. His house stands in a garden full of flowering plants from the time the Snowdrops and Crocuses open until Chrysanthemums close the floral season. It is visited by many Lepidoptera, and often rarities. On Oct. 5, 1892, he took the first ♂ *eubule* on flowers of a scarlet Geranium. His mother hastily informed him of a new arrival, and, being a little hasty, startled the insect, so that it flew high in the air, circled about for a moment and descended upon the same truss of flowers before he had left the spot, and was quickly netted. The next capture of *eubule* occurred on the 10th, from flowers of a red Indian Shot (*Canna Indica*). Another specimen he took on the 14th of October from the flowers of *Nasturtium*, and his fourth on the 15th from a scarlet-flowering *Nasturtium*. The last three captures were easily made. Of these one is a ♀, and two of the number fair specimens. A ♂ which I received is almost perfect. He likewise took in this garden, later on in October, two specimens of *Vanessa milbertii*, one a ♀ without a blemish, and a ♂ rather the worse for wear. One of these was taken on a Chrysanthemum. Both *Callidryas eubule* and *Vanessa milbertii* are rare in this vicinity.

Mr. J. Mohus saw several *eubule* flying high near Bay Ridge, L. I., this Autumn. The same entomologist took a great rarity for this latitude in October last in the upper part of New York City. It was *Thysania zenobia*, which he took off a high tree resting in the posture of a Geometrid, and which he was inclined to think it was, until shown to me. In color it is good, but inferiors badly torn. I think it is a female specimen. The exact shade of this fine insect I would liken to a cinereous-pink, the color of ashes of a red-ash coal, which, with its horizontal bars of black, produces a fine contrast.

A NOTE ON THE SATURNIIDÆ.

By HARRISON G. DYAR.

I am under obligations to Prof. Smith for many favors, I shall ask him to allow me to retract the term "undoubtedly," which seems to have given offence, and argue the question on its merits.

As I have shown that the gradation in the double set of pectinations in the antennæ of the Saturniidæ from equally long in both sexes, through the upper pectinations becoming shorter in the ♀, then absent, and finally shorter in the ♂, the continuation of this process would produce the structure of *Hemileuca*. In the last genus of the Saturniidæ, as limited by Prof. Smith, viz., *Coloradia*, we have a most interesting condition, which shows the correctness of my position. The second set of pectinations is absent in the female and shortened in the male; the pectinations themselves curve slightly forward, approaching the structure of *Hemileuca* and *Pseudohazis*, and beginning to depart from the structure of the other genera of the Saturniidæ (*sens* Smith), where they are nearly straight. By count, the antennæ of *Callosamia* have 27 joints, those of *Pseudohazis* 48 joints, but those of *Coloradia* have 37 joints, being nearly intermediate. *Coloradia* has two distinct internal veins in the secondaries, again approaching the "Hemileucidæ" and differing from the "Saturniidæ."

Concerning the other differential characters pointed out by Prof. Smith, we find the same interesting condition. The eyes are large, but do not reach the vertex of the head; the antennæ are on a prominence, and are separated by more than their own diameter.

Thus *Coloradia* forms an excellent connecting link between the "Saturniidæ" and the "Hemileucidæ" of Prof. Smith, much nearer in general structure to the latter, but possessing the double pectinations in the male antennæ. The existence of this intergrading form shows the close relation of the moths which Prof. Smith would place in different families, without sufficient reason as it seems to me.

I have before me a larva which is probably that of *Coloradia pandora*. It was received from Mr. C. A. Wiley, of Miles City, Mont., to whose kindness I am indebted for it. It is covered with long branching processes, tipped with spines, like those of *Hyperchiria*, *Pseudohazis* and *Hemileuca*. The arrangement is

that of *Pseudohazis*, which differs slightly from that of *Attacus* in the number of processes. Thus the larval characters also bear out my view that we have to do with but one family. Prof. Smith's terms might be used as subfamily names, but I would include *Coloradia* in the Hemileucinæ, basing the separation of the subfamilies on the characters of the internal veins of the secondaries.

The fore tibiæ of *Coloradia* end in a long, sharp spine, exactly as in *Pseudohazis;* I should hardly call it a claw in either case. But the small epiphysis is present in *Coloradia*, apparently correlated with the double pectinations of the antennæ.

The only comment on Mr. Dyar's note is, that there are no families in the Lepidoptera which do not show forms as completely intermediate as he considers *Coloradia*. Somewhere a line must be drawn, unless we dispense with families altogether.—J. B. SMITH.

THE NORTH AMERICAN PSYCHODIDÆ.

By S. W. WILLISTON, Lawrence, Ks.

In the study of numerous new species of *Psychoda* and *Pericoma* from the island of St. Vincent, I have compared all the material in the family from the United States and elsewhere that is accessible to me. I give here the description of two new species, which are of interest, because of their large size. *P. alternata* Say is our most common species. It is often found about damp places, among leaves, and is frequently attracted by lights during Summer nights. It probably occurs over the greater part of the United States, and will be recognized by its pale color, small size, and the black dots of hair around the margin of the wings.

Psychoda albipunctata n. sp. ♂.—Wings rather broad, clothed rather thinly with brownish and blackish hairs; a tuft of blackish hair near each furcation; at the extremity of each vein, save the first and last, a smaller white one; a small white tuft also, near the black one of the anterior furcation; the prefurca of the second vein with longer and yellowish hair. Abdomen in ground color luteous and blackish, the hair abundant and erect, for the most part gray, or brownish gray, with black intermixed. Hair of the thorax brownish gray, abundant; antennæ yellow, elongate, longer than the abdomen; basal joints moderately thickened, the remaining joints slender, verticellate with white hairs. Legs brown, clothed

with brownish hair and tomentum, with narrow annuli of white tomentum, at tip of tibiæ and metatarsi, hind metatarsi ciliated; tarsi stout. Length 2.2 mm.; of wings, 2.2 mm.

Three specimens, Havana, Cuba. Col. Nat. Museum.

Psychoda slossoni n. sp. ♂.—Wings rather narrow, the upper surface clothed for the most part with rather long, black hair, with one or two poorly differentiated bands or spots of whitish hair; costa at the base with a large tuft of dense, long, black hair, beyond the tuft the hair becomes gradually shorter and somewhat intermixed with whitish; on the posterior margin the hair is dense and long; black, except between the termination of the sixth and seventh veins, and at the tip, where it is white. Body black, not shining; abdomen and scutellum clothed with long white hair, the dorsum of the thorax apparently with black and white hair; antennæ not longer than twice the greatest diameter of the head, slender, light yellow; the basal joints dilated, black, and densely clothed with black hair; the following joints elongate, slender, with a row of about six slender, successively longer, erect, straight, fine bristles on the upper margin. Legs yellowish, the tarsi blackish; tibiæ and tarsi, or at least the two anterior pairs, ciliate, with long black hair; that on the tibiæ on both sides distally; that on the tarsi chiefly on the basal joint and on the posterior and dorsal margin. Length 2.2 mm.; of wings, 2.75 mm.

A single male specimen from Watkins Glen, N. Y. Mrs. A. T. Slosson.

A female specimen collected with this male differs so much that I at first thought it represented a distinct species, and it is not at all unlikely that it does. The hair on the wings is not as long; there are no white spots at the tips of the longitudinal veins; the hair of the body is white throughout; the basal joints of the antennæ are but little dilated and have white hair; the legs are wanting.

Psychoda alternata Say.

This species is easily recognizable. I have specimens from Connecticut, Michigan, Dakota, Tennessee and Kansas. I am not sure but that specimens from the West Indies are of the same species.

I HAVE lately discovered that *Meromacrus* Rondani (Esam. di. var. sp. d'Ins. Bras. p. 10, 1848) is quite identical with *Pteroptila* Loew (1885). There is no excuse, either for the proposal of the name by Loew, or the failure to recognize the identity by myself, sooner. Our species should be known as *Meromacrus* in the future.—S. W. WILLISTON, Lawrence, Kans.

Collections of the American Entomological Society.

ED. NEWS.—Will you kindly permit me, through your columns, to say a few words regarding the value of the American Entomological Society to the scientific worker. I did not fully appreciate its importance until I spent the past Winter in Philadelphia, and am certain no one will give a heartier welcome or grant more privileges than its members. It has specialists in almost every order of insects, and some orders have several. The collection, as a whole, is a fine one, and, through the work and generous donations of these men, it has in special lines become very complete. Perhaps no one there has done more for the Entomological Department than Mr. E. T. Cresson, our distinguished Hymenopterist. His entire collection, including types, has been given to the Society. A student working in this order will find no other collection that nearly equals it. Although Mr. Cresson has given up further work, he is ever ready and willing to aid others in any way that he can. Mr. Fox is taking up the work where it was left, and is adding his share to make it more complete. In Lepidoptera the collection has been kept up to date and improved in many ways by Dr. Skinner. He has added many fine specimens in Rhopalocera, which is his specialty. Dr. Horn and others have done much to make the collection in Coleoptera what it is. Mr. Liebeck is just rearranging the large and very complete collection, so that it is in fine condition for study. The general order Neuroptera is growing very fast through the work of Mr. Calvert, and is very strong in Odonata. The collection in Diptera is becoming a very respectable one through the work of Mr. Johnson. These are only a few of the many entomological workers that help each year to add to and improve the collection in many ways.

But these fine collections in the various orders would be of little value was there not something else to go with them. Right adjoining, as handy as can be, is one of the finest and most complete scientific libraries there is. Foreign as well as American books, pamphlets and magazines are kept, and many a rare publication is found on its shelves that the general entomologist has never seen. It is the combining of both the library and collection supplemented by a live, active corps of specialists that makes the Society an inducement worthy of careful consideration by the student specialist.—G. C. DAVIS, Agr. College, Michigan.

FIELD NOTES.

By H. MEESKE, Brooklyn, N. Y.

Telea polyphemus is double brooded on Long Island. *Tolype velleda* I always collect on *Prunus virginica*. *Eaclis imperialis* has been very plentiful for the last four years around Brooklyn, and larvæ destroyed the foliage of a number of maple and evergreen trees of value. If I had not collected the larvæ by hundreds they would have done much damage. A dozen larvæ were sometimes to be found on one tree. I have seen the caterpillars on trees where not a leaf was left. I have found them feeding on sassafras, wild cherry, rose, oak, gum, spruce, dogwood, hickory, maple, thorn (*Myrica cerifera*), *Viburnum dentatum*. I never found them on willow or poplar trees, some of which grew in the locality. They appear to eat almost everything in the line of tree or shrub, and probably eat *Plantanus*, fruit trees, birch, elm and chestnut. A friend collected 600 larvæ on pine on Long Island in one day. Of *Chrysomela scalaris*, I collected 360 specimens in two hours from the bark of the black birch. As they were mostly high up on the bark and branches, those I secured were few in comparison to the numbers there. *Ergates spiculates* I found on trunks of spruce at Hot Springs, Las Vegas, N. Mex., altitude 1000 to 8000 feet. Of twelve specimens collected, two were males. *Citheronia regalis* was found by a friend feeding on button-brush. I have found them on sumach, hickory, gum and walnut. At least half of them were sick from the inroads of a fungus. I have found *E. imperialis* and *Thyreus abbottii* affected in the same way. *Hemaris thysbe*, common on *viburnum*, I have often found 50 to 100 eggs on a bush. *Everyx versicolor* is said, by some one, to pupate under water. I experimented with twelve larvæ in 1891, and kept water in the bottom of the glass jar, and as soon as they had spun the cocoon and changed to pupæ, I let in, gradually, more water, which softened the cocoon and drowned some of my pupæ, so I do not believe in that method any more. Most of the eggs of this species are deposited on bushes standing high and dry on the ground. On the bushes on dry ground I have found as many as twenty eggs at a time, and but few eggs or larvæ on bushes in the water. *Hyparpax aurora* I have seen destructive to oaks, especially the very young trees. *Phobetron pithecium* I have found on *Betula alba* and *B.*

nigra, and have known it to be found on chestnut. *Ceratomia amyntor* also feeds on *B. alba* and *nigra*. *Smerinthus excæcatus* also feeds on these two. A friend had several hundred cocoons of *Attacus cynthia* which were collected in 1890; all were kept in the same box and came from the same locality. Some emerged in the Summer and some in the fall, and over a hundred living pupæ are not out yet (February, 1892). *Hyperchiria io*, I think, is sometimes double brooded on Long Island.

In 1888 I found two male specimens at the electric light late in August. Caterpillars of this moth are sometimes found late the fall after all the leaves have been destroyed by the cold weather. *Nadata gibbosa* caterpillars I frequently find on *Prunus virginica*. This is also double brooded on Long Island. *Limacodes scapha* larvæ were quite common in 1889 on chestnut and hickory, and at Elizabeth, N. J., I found them on *Myrica cerifera*. *Amphion nessus* may be destructive to grape vine. The larvæ keeps on the ground in day time. It is also common on Virginia Creeper. It can be trapped by placing a board on the ground, under which is put dead leaves or moss.

Harrisimemna sexguttata larva on *Ilax*. It wears a cap, or some long hairs. It is carried for protective purposes and is shaken when the larva is disturbed. The larva eats quickly into solid wood to pupate and closes the opening with a door which looks like lead.

Papilio turnus, common on cherry and tulip trees. I have also found them on magnolia and lilac. I have reared five specimens of *glaucus* from Long Island larvæ. *Papilio troilus*, common on sassafras at Ridgewood, L. I.; all found on low bushes and as many as eight larvæ on a bush. I had over 100 pupæ, but about half were parasitized. *Smerinthus modesta* very common, and many on every willow, but very local. A friend had 400 pupæ in one season. They proved very destructive to the foliage, but mostly to large trees and the upper branches; they are hard to find before being full grown, after which they strip the branches. If it had not been for our collecting I think they would have greatly damaged the willows in Evergreen Cemetery, Brooklyn. *Ceratomia undulosa*, very destructive to lilac at Ridgewood. I collected all stages, from a few bushes, over 400 caterpillars, and the leaves were nearly all eaten. *Deidamia inscriptum* is destructive to Virginia Creeper, and may sometimes prove fatal to

the vine. The moth will sometimes lay eggs on nearly every leaf. The larva of *Darapsa myron* feeds on the same, but is much stung by ichneumons. *Empretia stimulea*, according to the 5th U. S. Agr. Report, p. 146, is nowhere a common insect. I have found the imago in copulation, by beating, at Ridgewood, in 1887, in numbers. The larva was very common on elm, cherry, sassafras, and also on poison ivy; I could have collected a thousand, but only took one-half of the larger larvæ. *Grapta umbrosa* was also common on the elms, but many had been ruined by ichneumon and tachina flies.

COLEOPTERA INHABITING FUNGI.

By W. E. SNYDER, Beaver Dam, Wisconsin.

One bright day about the middle of last August I started on a short collecting trip in quest of Coleoptera, making a low piece of woods on the shore of Beaver Lake my special place of search. When collecting there previously I had noticed an abundance of various species of fungi, and concluded it would doubtless offer many good things to my cabinet. I regret that I cannot give the scientific names of the species mentioned below, but never having studied them, I am unable to do so.

Reaching my destination I soon found a very large, bright-colored fungus, so dry that it was very brittle, growing on the side of a large poplar tree. It was about fifteen feet from the ground, so I climbed up to it, and, after some hard work, succeeded in breaking it off, and then descended in order to investigate my prize. Carefully breaking it in pieces in my large hat, in order that no specimens might escape, I soon had its contents in the collecting bottle. From it I took four of *Dacne 4-maculatus*, over one hundred *Tritoma flavicollis*, six of *Mycetophagus punctatus* and four of *M. pluripunctatis*. I considered that a very productive fungus. From others of the same species of fungus I secured some fifty more of the *Tritoma* and three or four of *M. punctatus*, but not a single other specimen of *Dacne* or *M. pluripunctatus* was found. From the same species of fungus I also took a ♂ and ♀ of *Diaperis hydni*.

I next investigated another kind, and our most common poplar fungus, and from one 8 by 12 by 3 inches thick, I captured nine-

teen of *Boletotherus bifurcus*. The larvæ and pupæ were found in the same fungus. I investigated several more, but found only larvæ of this species.

The low, rotten, and fungus-covered stumps near the edge of the woods next claimed my attention. Here I found several hundred *Hoplocephala bicornis*, also a few *Platydema excavatum* and several larvæ, probably of the former. On another species growing most abundantly on the top of the stumps were scores of *Cratoparis lunatus*. Hiding under the loose fungi and among the rotten wood, were found *Melandrya striata* and several species of Carabidæ. Two specimens of *Cyllodes biplagiatus* were taken from still another variety growing on poplar. A species growing on oak trees contained numerous larvæ unknown to me. I should like to hear through this journal more concerning the species of Coleoptera to be found inhabiting fungous growths.

———o———

ELEMENTARY ENTOMOLOGY.

LEPIDOPTERA–HETEROCERA (Moths).

By Prof. JOHN B. SMITH, New Brunswick, N. J.

It has been usual to follow the Bombycid series by the Cossidæ, though they are very decidedly out of place between the Bombycids and Noctuids. In venation the insects are characterized by having two internal veins to the primaries and three on the secondaries; and on the latter an oblique cross-vein between the costal and the subcostal. In these characters they are unlike any of the other families known to me, and are therefore at once recognizable. Usually, the head is small in proportion to the body, the palpi are small, and the tongue is obsolete. The ocelli are wanting. The antennæ are usually short, or of only moderate length; closely pectinated in the male, sometimes for their full length, sometimes broadly feathered from the base to the middle only. In the female they are simple, serrated, or even shortly pectinated. We have two somewhat divergent series among our species, of one of which *Cossus* may be considered typical. In these the wing-form and general appearance, as well as the long robust body, reminds one of the Sphingidæ or Hawk-moths. The colors are usually black and white, or gray, and the markings are usually dotted, marbled, or transversely strigate. There

is often a very great difference between the sexes, not only in size and color, but also in the wing-form and in the maculation; indeed, the case of male and female of one species forming types of distinct genera, is not unknown among this family. The second series has a more Bombycid appearance, and may be typified by *Hypopta*. The vestiture has a more dense, matted appearance than in any Bombycid, however, and the wings have unusually long and very even fringes. In this series the colors are white, or pale gray and yellowish, with longitudinal marks and lines, and there is no marked difference between the sexes. The larvæ of all the species, so far as I know them, are wood borers, living in the trunks of trees and boring great channels. As is usually the case with *Endophytes* of this character, they are white, or with a faint reddish tinge, and are furnished with piliferous tubercles, which are as usually black. The abdominal legs have a complete circlet of spinules, in which character they differ from all the Bombycid larvæ, and agree with those of the Sesiidæ and Pyralidæ. They usually require more than one, and sometimes more than three years to complete their transformations from egg to imago.

Our native species of Cossidæ are rarely common, and yet more rarely injurious. Within the last decade or thereabouts, there has been introduced into our country, in the vicinity of New York, a European species, *Zeuzera pyrina* Fab., which bids fair to become a first-class pest to Elm and other shade and ornamental trees. In Newark, N. J., it is becoming annually more abundant, and signs of its injuries increase. Mr. E. B. Southwick reports that, in the Central Park, N. Y. City, its ravages are increasing rapidly, and from the nature of the injury done it is one of the pests most to be dreaded.

Following the Cossidæ in our lists are the Hepialidæ, which are also out of place. The family is unique in every respect, and has the appearance and characters of a survivor of an ancient type left stranded among a mass of modern developments. Both pairs of wings have twelve veins; both have an accessory cell, and in both the median cell is divided. There are no ocelli, there is no tongue, and no frenulum. The head is minute, the palpi are weak, the antennæ short and bristle-like. The wings are large and often frail, the thoracic rings are unusually well marked, and the body is usually long and cylindrical. Prof. Comstock

has recently pointed out a peculiar backward projecting lobe near the base of the inner margin of the fore wing. "This lobe passes beneath the hind wing, and thus the costal edge of the hind wing is held between this lobe and the inner margin of the fore wing, which overlies the hind wing." Only one other lepidopterous family, the Micropterigidæ, has a similar structure, and these two Prof. Comstock proposes to separate from all the other Lepidoptera under the name "Jugatæ," calling the others "Frenatæ." It is interesting to note that this "jugum" reappears in the Trichoptera, or Caddice-flies, and apparently emphasizes the suggestion of relationship between some such type and the moths in times long past.

The larvæ of Hepialidæ, so far as I know them, are wood borers, and quite often in the roots of trees and shrubs. They also require more than one year to attain their full development, and not often found.

The moths are not common, as a rule, and most collections contain very few of them. They fly at twilight, and have received the somewhat fanciful name of "Ghost-moths," from their quiet, shadowy mode of flight. Sometimes they may be found during the day under stone bridges, or under overhanging ledges of rock, and a locality for them once discovered—they can be taken year after year—sometimes in no small numbers. Some of the Western species appear to be much more common than any from the Atlantic coast.

PICTURES FOR THE ALBUM OF THE AMERICAN ENTOMOLOGICAL SOCIETY have been received from D. B. Young, H. F. Bassett, George H. Hudson, Herbert Osborn, Chris. H. Roberts, H. W. Wenzel, Rev. Thos. W. Fyles. This is getting to be a fine and valuable collection, and we wish to make it as complete as possible, and will be glad to hear from those who have not already sent their photos.

Baris scolopacea Ger.—An unrecorded species introduced from Europe, first taken by the writer in June, 1885, on *Chenopodium album*, growing rank on a lot below this city (Philadelphia). A small, prettily marked species, of which a very few specimens were captured the first year, but which has steadily spread over a greater territory and can now be found every season in fair quantities. The beetles have remained unnamed in several of the local collections, until recently their identity was established by Mr. Schwarz, of Washington; D. C., due to some exchanging between Mr. Wenzel, of this city, Mr. Ulke and himself.—CHAS. LIEBECK.

ENTOMOLOGICAL NEWS.

Published monthly (except July and August), in charge of the joint publication committees of the Entomological Section of the Academy of Natural Sciences, of Philadelphia, and the American Entomological Society. It will contain not less than 300 pages per annum. It will maintain no free list whatever, but will leave no measure untried to make it a necessity to every student of insect life, so that its very moderate annual subscription may be considered well spent.

ANNUAL SUBSCRIPTION $1.00, IN ADVANCE.

☞ All remittances should be addressed to E. T. Cresson, Treasurer, P. O. Box 248, Philadelphia, Pa.; all other communications to the Editors of ENTOMOLOGICAL NEWS, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

PHILADELPHIA, PA., APRIL, 1893.

ONE of the objects in starting the NEWS was to secure the early publication of papers too short for the Transactions of the American Entomological Society, and also those of a more popular character which were unsuited for a publication like that of the Society. News notes, resumé of literature, etc., were to be important features. We also determined, as nearly as possible, to have the journal appear promptly the first of each month. Systematic workers in Entomology knowing from experience, how long they had to wait for the appearance of their papers in print when presented for publication in the Transactions and Proceedings of the learned societies and government publications took advantage of the regular appearance of the NEWS and sent their articles to that journal. We did our best to try and publish them and each year increased our quota of pages, and in special instances largely increased the number of pages in individual numbers, but we soon found, in spite of our best will and willingness to oblige, that we were compelled to call a halt, as each month we had enough mss. for three or more numbers in advance and everybody was clamoring for an early appearance in print. We then established the rule that papers would appear according to date of reception, but this did not entirely cure the evil, so we made the rule that no technical paper should occupy more than two pages, brevier type, but still they came, and now do come, all well worthy of publication, but the question is how to do it. We give much for the money, and can do no more, and earnestly request authors to keep within our limit of two pages for the more technical papers. In some cases authors have voluntarily paid for more space, and to have their papers go in a certain issue, and we state this to show that there is not a favored few. We will do our best, but it can hardly be expected that we should publish all our mss. in one number, or take up too many pages with one article, as our motto is, something in each number of interest to every reader.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

The Black Peach Aphis.—In Bulletin No. 40 of the Cornell Experiment Station Mr. Slingerland has an article on the Black Peach Aphis, *Aphis persicæ-niger*, which has, it seems, made its appearance in destructive numbers in some sections of New York State. Nothing is added to our knowledge of the history of the insects, and under the head of remedies he makes the statement concerning the root inhabiting form that "There is on record no experiments in the destruction of this form." * * * This is not strictly correct; in Bulletin No. 72 of the New Jersey Station I recommend kainit for the root form of this insect, and in Bulletin No. 75 I quote the positive testimony of Dr. E. F. Smith, who made the experiment, that tobacco dust had been tried with great success. In my report for 1890 I cite the testimony of growers as to the effects of applications of kainit on infested ground, and throughout my reports are notes on the same subject. If my memory serves me, Mr. Alwood, of the Virginia Station, has also stated at some meeting of economic entomologists that tobacco had been successfully used by him or in his State. Dr. E. F. Smith has, somewhere, published his experiments on the root forms of the peach louse in some detail, and Mr. Slingerland, however small his faith in the efficiency of the remedies, might at least have stated that claims have been made for them; leaving it open to the farmers to make experiments if they choose. Though I have made no experiments which have any claim to be called conclusive, yet the uniform success that has attended a liberal use of kainit in peach orchards infested by these root lice, leads me to feel safe in making positive recommendations. Thus far I have not found a case where the applications have failed. The trouble with the trees was not starvation in all cases, but entirely an aphid attack.

Carnivorous and Herbivorous Insects.—The food relations of some of our supposed predaceous insects have been carefully studied by Prof. S. A. Forbes, and some contributions have been made on the subject by Mr. F. M. Webster and others. Among the predaceous forms the Coccinellidæ have been shown to be by no means as universally carnivorous as was once supposed, but that vegetable matter, and particularly fungus spores formed a considerable proportion of their nourishment at some seasons of the year. *Coccinella 9-notata* is one of the most common of our "lady birds," and there is no question that, in both larval and adult stages, much, and sometimes all of its food is furnished by plant lice. Others as well as myself have actually observed them feeding voraciously on quite a number of species of aphids, so that this habit of the species is in no doubt. *Epilachne borealis*, on the contrary, is as universally known as an herbivore, which is gradually but steadily increasing in num-

bers and in destructives, in New Jersey at least. I was curious to know just what, if any, difference in mouth structures accompanied this divergence in habits, and dissected out the parts in the above-mentioned species, and with a somewhat unexpected result. While in the *Epilachne* I

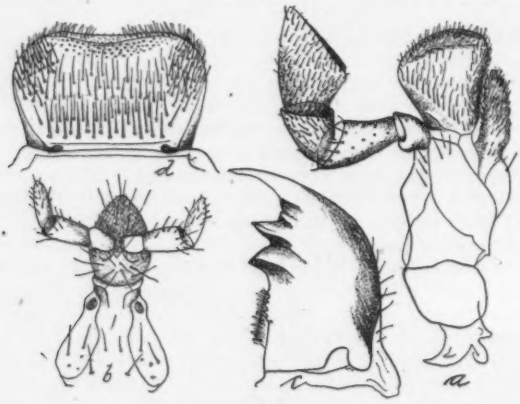


Fig. 1.

found a stout, chitinous mandible with a prominent acute apical and two smaller internal teeth, such as might well belong to a carnivore, I found in the *Coccinella* a mandible which I would as readily have referred to a

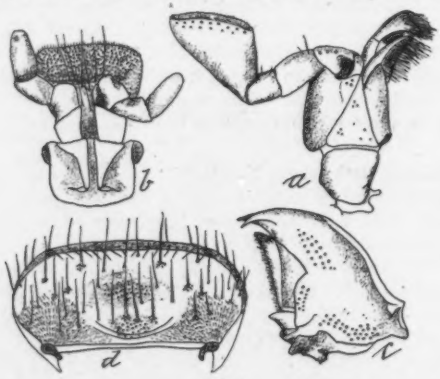


Fig. 2.

pollen or fruit feeder. The mandible is distinctly compound, with all the sclerites well marked, the apical tooth small and bifid. It will be noticed by comparing the figures herewith given that the differences are not confined to the mandibles, but extend to all of the mouth structures. The

maxillæ are quite radically different in the development and the texture of the parts, and in this respect the *Coccinella* more resembles other predaceous insects. The form and arrangement of the sclerites of the labium differ throughout, and show no family resemblance in any character that I have noted.

The labrum of *Coccinella* differs markedly in form from that of *Epilachne*, but yet more markedly in the sensitive structure beneath it—the epipharynx. A marked peculiarity in *Coccinella* is found in a central and basal series of sensory pits which are not furnished with tactile hairs. The latter are few in number, as compared with *Epilachne*, and are much less regularly arranged, but many, if not most of them, have around the base a number of supplemental pits, which are not furnished with perceptible processes of any kind. I have made no detailed comparisons between the parts, preferring to let the figures speak for themselves, but it gives an indication of differences remaining to be studied, and contradicts a generalization which I had been inclined to make, that compound mandibles would be rarely found in predaceous forms.

EXPLANATION TO BASE FIGURES.

Fig. 1.—Mouth-parts of *Epilachne borealis: a*, maxilla; *b*, labrum; *c*, mandible; *d*, labrum beneath—epipharynx. Original.

Fig. 2.—Mouth-parts of *Coccinella 9-notata: a*, maxilla; *b*, labrum; *c*, mandible; *d*, labrum beneath—epipharynx. Original.

The Cattle Tick.—Bulletin No. 24, of the Texas Station, on the above subject is an unusually interesting and valuable one. Dr. Cooper Curtice, its author, is well known as a veterinarian, and has devoted himself more especially to a study of the parasites of domesticated animals. The history of this tick is very completely given, and there is much information concerning the structure and physiology of the insect, while the author leaves yet some problems for others to solve. There is a consideration of the relation of the ticks to "Texas fever" in cattle, but Dr. Curtice is apparently not convinced that any real relation exists between them.

Dr. M. Francis treats of remedial measures, and finds several of the sheep dips preferable to the kerosene emulsion. He does not find that Mr. H. E. Weed's recommendation of sulphur is warranted by experience in Texas. The efficiency of the sheep dips as compared with the kerosene emulsion is somewhat surprising, and warrants more careful study of the composition of these dips.

I GIVE a new locality for the *Lycæna sonorensis*, it being in the Yosemite on the trail leading to the foot of the Upper Yosemite Falls. I took several between the Columbia Rocks and Valley View Point during the month of May, 1892, and they were seen on the opposite side around Union Point on the trail leading to Glacier Point during the month of June, but they were so worn I took none of them.—J. B. LEMBERT, Yosemite, Cal.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Owing to low subscription rate, "extras" will be charged for, and when they are wanted, it should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

Dr. HORN expects to be absent from this city from the middle of April to the first of June. This note will explain to correspondents the cause of delay in receiving replies.

THE NEWS begs to acknowledge the receipt, on several occasions, from Mr. V. R. Pratt, of copies of the Reynoldsville (Pa.) *Volunteer*, containing his articles on the entomology of Reynoldsville and vicinity. The last one received is on Compound eyes, whose structure Mr. Pratt illustrates by the piling together of six-sided church steeples to form a hemisphere, with the points of the steeples in the centre, the bases of the steeples on the surface representing the facets. The article is an excellent example of the interest which can be imparted to presentations of the facts of Entomology.

THE many friends and scientific correspondents of Dr. John Hamilton, of Allegheny, will be delighted to know that he is on the fair road to recovery from his recent protracted illness, which threatened at one time to terminate fatally. He has been confined to his bed since the 5th of February, but is again able to sit up for a part of each day, and hopes ere long to be able to resume his studies of the Coleoptera, in which he has done so much excellent work. He has in hand a lengthy paper upon the beetles of Alaska, which will be a most valuable contribution to our knowledge of that comparatively little-known field, and his Catalogue of the Coleoptera of western Pennsylvania is in such a state that it might soon go to the hands of the printer. It is earnestly to be desired that he may live to publish these papers upon which he has expended many years of diligent labor.—W. J. HOLLAND.

THE imago of *C. dione* first makes its appearance about June 20th. The insect is found in the greatest abundance on tall slough grass, as is also *C. thæ*. However, I have rarely found them on wet, marshy ground. *C. dione* is not difficult to collect, as it may often be seen hanging to the side of the grass blade and easily captured before disturbed. When once disturbed, however, its flight is rapid and very hard to follow with the eye.

There are two broods in a season, the second making its appearance in July. In the latter part of July and August the species is most abundant, but nearly all specimens are badly demoralized, and a perfect one is hard to find. The favorite flower of the butterfly is a species of milkweed. From the milkweed I have sometimes taken as many as twenty specimens with a single stroke of the net, all of which, with a few exceptions, proved to be imperfect. A description of the life habits of *C. dione* is in most respects identical with that of *C. thæ*. *Thæ* appears a few days before *dione*, but is not nearly so abundant in this locality. The larva of *C. dione* seems to be an especial attraction to the ants; on the food-plant I have seen larva completely covered with them. Whether the larva itself is the attraction or the gummy product of the plant I do not know. The ants appear to be friendly, and never do them any injury. This is also the case with *C. thæ*, as doubtless with all *Chrysophanus* larva.—HENRY G. WILLARD, Grinnell, Iowa.

JOHN OBADIAH WESTWOOD, M.A., F.L.S., honorary president of the British Entomological Society, died in London, January 2d. Prof. Westwood was born in Sheffield in 1805. He was educated at Litchfield, and was appointed in 1861 to the professorship of zoology founded at Oxford by the munificence of the late Rev. F. W. Hope.

In 1855 the Royal Society awarded him one of the royal medals for his scientific works, and in 1860 he was elected to fill the place of the illustrious Humboldt as corresponding member of the Entomological Society at Paris. He wrote: Introduction to the Modern Classification of Insects," "Entomologists' Text Book," published in 1838; "British Butterflies and their Transformations," in 1841, and a number of other works of a similar nature.

IT may be of interest to the readers of the NEWS to know that I took one ♀ specimen of *Spilosoma prima* Slosson at electric light last Summer. Very likely more could have been captured, but not being on the lookout for the species, may have passed them over as the more commoner species of the same family. I saw a specimen of *prima* in New York, and at once recognized my unnamed specimen. It has, I believe, only previously been taken in the White Mountains. I can record the capture here of *Calymnia calami* Harvey, last July. I have not seen it mentioned in any New York lists.—CHAS. S. MCKNIGHT.

OUR KNOWLEDGE OF INSECTS.—In England we have about 12,000 species of insects, and it is perhaps not to be expected that the ultimate total, when all the smallest species have been collected and studied as assiduously as the larger ones, will exceed this estimate by more than a few hundred, or at most one or two thousand. But with foreign countries it is very different; and I must confess that I was surprised, when I lately received a fine new species of *Phasmida* from Madagascar, to find that barely half a dozen species had yet been recorded from that island. If this is the state of our knowledge of such insects as *Phasmida*, how im-

perfect must it be of the smaller species of Coleoptera, Hymenoptera, Diptera, etc., many of which are of almost microscopic dimensions. Many insects are so local and so closely connected with plants which disappear before civilization that the same fate of extermination which has fallen on so many of the larger animals during the last century cannot but fall heavily upon these also. It is not too much to say that it is highly probable that a large proportion of the insects at present existing in the world will become extinct before their existence is even known to scientific men.—W. F. KIRBY in "Knowledge."

FOOD-PLANTS OF THE POTATO STALK-WEEVIL, *Trichobasis trinotata* Say.—This insect has for many years been known as affecting the stem of the potatoes, but of late is either changing its larval habits somewhati or else entomologists are becoming more apt in their investigations; possibly both. A recent Bulletin from the Iowa Experiment Station gives, besides the potato, several species of "Ground Celery" and the "Horse Nettle," while lately one of my correspondents near Cincinnati, Ohio, is complaining bitterly of injuries to his egg plants "during the last three years." Some sections of these affected plants of last year sent me February 1st contained adults of this weevil. It will now be in order to watch the tomato. The list of food-plants of the larvæ, as now understood, will stand as follows:

Solanum tuberosum, Miss. Margaretta H. Morris, Harris Ins Inj. Veg., 1841, p. 72; Flint ed. pp. 81–82.

Solanum carolinense, *Physalis philadelphica*, *P. virginiana* var. *ambigua*, *P. lanceolata*, F. A. Sirrine, Bull. 19, Iowa Agri. Exp. Station, November, 1892 (issued February, 1893), pp. 589–94.

Solanum melongena, F. M. Webster.

Prof. C. P. Gillette (Bull. 12, Iowa Agri. Exp. Station, p. 547) stated, in 1891, that he had observed the adults in Winter in two species of *Physalis*, but does not give the species.—F. M. WEBSTER, Wooster, Ohio.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Pliny, to whom the origin of the sweet, viscid fluid (honey-dew) secreted by the Aphides was unknown, says, "it is either a certaine sweat of the skie, or some unctuous gellie proceeding from the starres, or rather a liquid purged from the aire when it purifyeth itself."

Entomological Literature.

ZOOLOGISCHER ANZEIGER, Leipsic, Jan. 30, 1893.—On the parasitism of the Pseudoscorpions, F. Leydig.

LE NATURALISTE, Paris, Feb. 1, 1893.—The means of defense of some nocturnal Lepidoptera, L. Cuenot, figs.

THE AMERICAN NATURALIST, Philadelphia, March, 1893.—Notes on Ohio and other Phalangidæ, C. M. Weed.

THE ENTOMOLOGIST'S RECORD, London, Feb. 15, 1892.—*Heliothis armigera* [bred in imported? tomatoes], J. W. Tutt.

ATTI DELLA SOCIETA VENETO-TRENTINA DI SCIENZE NATURALI (2), I, Padua, 1893.—The family Phytoptini, G. Canestrini, 16 pls.

LEPIDOPTERA INDICA. By F. Moore, part xii, London, L. Reeve & Co., 1892.—Pp. 273–317, pls. 87–94. This part completes volume i.

THE JOURNAL OF THE CINCINNATI SOCIETY OF NATURAL HISTORY, XV, 3 and 4, Feb. 24, 1893.—Mordellidæ in the vicinity of Cincinnati, Ohio, C. Dury.

ARCHIV FUR NATURGESCHICHTE, lix, I, 1, Berlin, December, 1892.—On the various types of six-footed larvæ among the fresh water mites, Dr. P. Kramer.

BIOLOGISCHES CENTRALBLATT, Erlangen, Feb. 1, 1893.—Sounds by ants, E. Wasmann.—February, 15th. Self mutilation by Phryganid larvæ, Grafin M. von Linden.

ICONOGRAPHIE SUR QUELQUES SAUTERELLES VERTES*† par Alphonse Pictet et Henri de Saussure, Geneve. Imprimerie Aubert Schuchardt, 1892, pp. 28, pls. 3, 4to.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, London, March, 1893.—Notes on some experiments in hybridising Burnet Moths (Zygænæ), W. H. B. Fletcher. Many notes.

THE ENTOMOLOGIST, London, March, 1893.—The West Indian species of *Ceroplastes*, T. D. A. Cockerell. The cyanide reaction with yellow Lepidoptera, F. H. P. Coste.

ENTOMOLOGISCHE NACHRICHTEN, xix, 3, Berlin, February, 1893.—Remarks on C. Escherich's "Biological significance of the genital appendages of insects," C. Verhoeff.

CATALOGUS HYMENOPTERORUM hucusque descriptorum systematicus et synonymicus. Auctore, Dr. C. G. de Dalla Torre. Vol. vi: Chrysididæ (Tubulifera), Lipsiæ Sumptibus Guilelmi Engelmann, MDCCCXCII, pp. viii, 118.

---

* Contains new species other than North American. † Contains new genera.

SCIENCE, N. Y., March 10, 1893.—Notes on the wing color of North American Locusts belonging to the subfamily Oedipodinæ and its seeming relation to climatic conditions, L. Bruner.

VERHANDLUNGEN DER K. K. ZOOLOGISCH-BOTANISCHEN GESELLSCHAFT IN WIEN, xlii, 4, January, 1893.—On the pouch-shaped abdominal appendages of the female butterflies of the Acræidæ, A. F. Rogenhofer.

BULLETINO DELLA SOCIETA ENTOMOLOGICA ITALIANA, xxiv, 3, Florence, Jan. 28, 1893.—Revision of the European species of mosquitoes, Culicidæ, E. Ficalbi. New or little known Coccidæ, A. T. Tozzetti, figs.

THE BRITISH NATURALIST, London, March, 1893.—Portrait and sketch of J. A. Clark. Entomological nomenclature, C. W. Dale. The Pterophorina of Britain (cont.) J. W. Tutt. Is moisture the cause of melanism? J. E. Robson.

BULLETIN OF THE OHIO AGRICULTURAL EXPERIMENT STATION, No. 45, December, 1892.—Insects affecting the Blackberry and Raspberry, F. M. Webster, 38 figs., 88 species recorded.—No. 46, Underground Insect Destroyers of the Wheat plant, id. figs.

BULLETIN OF THE UNITED STATES GEOLOGICAL SURVEY, No. 93, Washington, D. C., 1892.—Received Feb. 28, 1893.—Some insects of special interest from Florissant, Colorado, and other points in the Tertiaries of Colorado and Utah, S. H. Scudder.

BIOLOGIA CENTRALI-AMERICANA, pt. cvi, London, January, 1893.—Arachnida Acaridea, O. Stoll, pp. 41-55, i-xxi, pls. xx, xxi. Coleoptera, vol. iv, pt. 1, pp. 525-564, pl. xxii, G. C. Champion. Rhynchota Heteroptera, pp. 369-384, pl. xxxiii, W. L. Distant.

THE FAUNA OF BRITISH INDIA, including Ceylon and Burma. Published under the authority of the Secretary of State for India in Council. Edited by W. T. Blanford. Moths, vol. i, by G. F. Hampson. London, Taylor & Francis, 1892, 8vo, pp. xxiii, 527; 333 woodcuts.

MITTHEILUNGEN DER SCHWEIZERISCHEN ENTOMOLOGISCHEN GESELLSCHAFT., viii, 10, Schaffhausen, January, 1893.—On hybridization among insects, Dr. M. Standfuss. Summary of the researches of M. Jules Gonin on the metamorphosis of Lepidoptera, Prof. E. Bugnion. Coleoptera Helvetica, Dr. G. Stierlin, pp. 289-320.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY (6), xi, 62, London, February, 1893.—Report upon the Myriapoda of the "Challenger" expedition, with remarks upon the fauna of Bermuda,* R. I. Pocock, 1 pl. On the probable sensory nature of the "appendix" of the antennæ of coleopterous larvæ, C. J. Gahan. *Aglia tau*, a connecting link between the Ceratocampidæ and Saturniidæ, and the type of a new subfamily Agliinæ, A. S. Packard. A reply to some observations on the mouth organs of the Diptera, B. T. Lowne.

* Contains new species other than North American.

PSYCHE, Cambridge, Mass., March, 1893.—Notes on Tachinidæ, S. W. Williston. Descriptions of new species and genera of West African Lepidoptera iii, W. J. Holland, 1 pl. *Orgyia badia* Hy. Edw. and other notes, with a table to separate the larvæ of *Orgyia*, H. G. Dyar. Synopsis of the North American species of *Megacilissa*, W. J. Fox.

THE PROCEEDINGS OF THE LINNEAN SOCIETY OF NEW SOUTH WALES (2), vii, 2, Sidney, Nov. 22, 1892.—A viviparous Australian *Peripatus* (*P. leuckartii* Sang.), J. J. Fletcher. Catalogue of the described Hymenoptera of Australia, pt. 11, W. W. Froggatt. Further notes on the viviparity of the larger Victorian *Peripatus*, generally known as *P. leuckartii*, A. Dendy.

THE CANADIAN ENTOMOLOGIST, London, Ont., March, 1893.—Canadian Hymenoptera. No. 3, W. H. Harrington. New Chernetidæ from the United States, N. Banks. Descriptions of new Braconids bred by Prof. A. D. Hopkins, W. H. Ashmead. Synopsis of the Asilid genus *Dioctria*, D. W. Coquillett. Notes from the Cornell Insectary—I. Some results of a trap lantern experiment, M. V. Slingerland.

THE TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1892, pt. III.—On some eggs of Hemiptera, Dr. D. Sharp, 2 pls.—On variation in the color of cocoons, pupæ and larvæ; further experiments, W. Bateson. Experiments in 1890 and 1891 on the color relation between certain lepidopterous larvæ and their surroundings, together with some other observations on lepidopterous larvæ, Miss L. J. Gould, 1 pl.

FLOWERS AND INSECTS—LABIATÆ by Charles Robertson, Trans. Acad. Sci. St. Louis, vi, pp. 101–131, Nov. 25, 1892—[ORCHIDS], Bot. Gazette, xviii, pp. 47–54, Crawfordsville, Ind., February, 1893. These are the most recent additions to a series of papers with the same title, which Mr. Robertson has contributed to various numbers of the Botanical Gazette, beginning with vol. xiv, p. 120, May, 1889, and to the Transactions of the Academy of Sciences of St. Louis, vol. v.

MIDDEN-SUMATRA.—Reizen en Onderzoekingen der Sumatra-Expeditie, exitgerust door het aardrijkskundig Genootschap, 1877–79, beschreven door le Leden der Expeditie, onder toezicht van Prof. P. J. Veth. Natuurlijke Historie. door Joh. F. Snelleman. Tweede Deel. Leiden. E. J. Brill, 1892. Forficularia, A. de Bormans. Lepidoptera, P. C. T. Snellen. Diptera, F. M. van der Wulp. Hymenoptera, C. Ritsema Czn and Dr. G. L. Mayr. Hemiptera, W. L. Distant and C. Ritsema Czn. Araneæ, Dr. A. W. M. van Hasselt.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

ARACHNIDA.

Acaridea: n. sp. C. Am., Stoll. Biol. Centr.-Am. Arach.-Acar. pp. 41–55.

Pseudoscorpiones—Chernetidæ: n. sp. from U. S., Banks, Can. Ent. xxv, pp. 64–67.

Phalangida: *Liobunum townsendii* Weed, Am. Nat. xxvii, p. 295, N. M.

COLEOPTERA.

Byrrhidæ: *Nosotetocus* (fossil), n. gen., Scudder, Bull. U. S. Geol. Sur. 93, p. 16. *N. marcovi*, p. 17, pl. 2, figs. 2, 3, Florissant, Col.

Carabidæ: *Carabites exanimus* (fossil), Scud., l. c. p. 17, pl. 1, fig. 4, White River, Utah.

Heteromera: n. gen. and sp., Mex., Cent. Am., Champion, Biol. Cent.-Am. Coleop. iv, pt. 1, pp. 525-564.

DIPTERA.

Dioctria parvulus, *rubidus*, Cal., Coquillett, Can. Ent. xxv, p. 80 and table of N. A. species.

Mycetophilidæ: *Mycetophætus* (fossil), n. gen. Scud., l. c. p. 20. *M. intermedius*, p. 20, pl. 2, fig. 5, Florissant, Col.

Oestridæ: *Palæstrus* (fossil), n. gen. Scudder, Bull. U. S. Geol. Sur. 93, p. 18. *P. oligocenus*, p. 19, pl. 2, figs. 1, 4, Florissant, Col.

HEMIPTERA.

Ceroplastes, 3 n. sp., West Indies, Cockerell, Entom. xxvi, pp. 81–83.

Cicada grandiosa (fossil) Scudder, Bull. U. S. Geol. Sur. 93, p. 15, pl. 1, fig. 3, Florissant, Col.

Heteroptera: n. sp., Mex., Cent. Am., Distant, Biol. Cent.-Am. Rhyn. Heterop., pp. 369–384.

HYMENOPTERA.

Braconidæ: n. sp. from W. Va. and tables of species of *Spathius* and *Cænophanes*, Ashmead, Can. Ent. xxv, pp. 67–79.

Megacilissa gloriosa, N. Mex., Fox, Psyche, vi, p. 421, and table of N. A. species.

Tenthredinidæ: *Atocus* (fossil), n. gen. Scudder, Bull. U. S. Geol. Sur. 93, p. 24. *A. defessus*, p. 25, pl. 1, fig. 5, Florissant, Col. N. sp. from Ontario, Harrington, Can. Ent. xxv, pp. 57–64.

LEPIDOPTERA.

Libytheinæ: *Barbarothea* (fossil) n. gen., Scudder, Bull. U. S. Geol. Sur. 93, p. 21. *B. florissanti*, p. 23, pl. 3, figs. 1–5, Florissant, Col.

ODONATA.

Fossil: *Trichocnemis aliena* Scudder, Bull. U. S. Geol. Sur. 93, p. 12, pl. 1, fig. 2, Florissant, Col. *Stenogomphus* n. gen., p. 13. *S. carletoni*, p. 14, pl. 1, fig. 1, Roan Mountain, Col.

ORTHOPTERA.

Pseudophyllidæ: *Acanthoprion* n. gen., *A. aztecum* Pictet and Saussure, Icon. Saut. Vert. p. 26, pl. 3, fig. 21, Mex.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

FEBRUARY 23, 1893.

Meeting called to order at 8.20 P.M., Dr. Horn, Director, in the chair. Members present: Laurent, Ridings, Calvert, Skinner, Liebeck, Welles. Associates: Boerner, Nell, Dr. Castle. Mr. Calvert stated that, in connection with the catalogue of Odonata he is preparing, he has been obliged to revise the genera of the subfamily Libellulinæ on account of the unsuitable character of the present ones for American species. The speaker gave the characters of the genera of *Diplax* and *Celithemis*, aided by drawings on the blackboard. Mr. Nell exhibited some pop-corn, showing depredations of the moth *Gelechia cereallella*, and exhibited specimens of the moth, chrysalis and larva. Dr. Horn exhibited the series of Galerucini he had used in the preparation of his paper on that subject. The group had been treated in 1865 by Dr. LeConte, but comparatively few species have been added since, and few reductions made by synonymy. The comparative characters of the genera were explained and dwelt on at length. Our species, previously under *Luperus*, will have to be called *Luperoides*. In a paper entitled Miscellaneous Coleoptera, Dr. Horn stated he would describe new species of *Dacoderus aegialites*. Mr. Liebeck recorded finding in this locality, in numbers, *Baris scolopacea*.

HENRY SKINNER, M.D., *Recorder*.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

Description of a new Sphinx and some notes on S. coloradus Smith.

By B. NEUMOEGEN, New York.

Sphinx franckii nov. spec.—Antennæ brown, culmen white. Head gray; palpi of same color, granulated with yellowish brown; collar also yellowish brown, with two oblique black streaks converging at upper centre; patagiæ light gray, heavily edged with black inwardly in their upper portion. Abdomen has a large area of dorsum in yellowish brown with a black centre line; broad black segmentary bands with whitish interspaces. Primaries light gray, shading into white at base, at apex and along submarginal line; black dashes along apical part of costa at apex, in internerval spaces, and a thin black line below and parallel with median vein; a double, black, submarginal line from below vein 7 to inner margin, bulging inwardly between veins 1–3, the outer line degrading into a large, blackish, irregular blotch near angle; the entire median and submarginal area of wing, up to near apex, covered with a peculiar bright

yellowish brown; granules of same color in apical part of costa. Secondaries have ground color of a yellowish white, with pronounced marginal and median bands of black; both wings have yellowish brown fringes dotted with black at nerval termini and brownish s. t. lines. Below, both wings brownish gray, fading into white basal tinges, especially in secondaries, which have whitish anal margins. Thorax yellowish brown. Abdomen silvery gray. Legs gray, with a sprinkling of yellowish brown. Expanse of wings 105 mm. Length of body 30 mm.

Hab.—Kansas City.

Type, ♂ collection of George Franck, Esq.

This insect forms a connecting link between *S. kalmiæ* and *S. chersis*, having in part of its primaries the peculiar yellowish brown of the former, and besides the light gray, as well the entire shape of wings of the latter.

I take great pleasure in naming it after my friend, Mr. George Franck, of Brooklyn, a well-known lepidopterist.

Sphinx coloradus Smith.

This is only a local (Colorado) variation of my *S. dollii*, Pap. i, p. 149, from Arizona. Mr. D. Bruce, in the last few years, has caught quite a number of this form, which, on the average, is somewhat larger than the typical. In the type the whitish space along costa and cell, as well as the black dashes between veins, are less pronounced, and the short, black, transverse, submarginal line between veins 2–5 is absent. In all other respects the insects tally.

———o———

SYNOPSIS OF THE N. AMERICAN SPECIES OF NOMIA.

By Wm. J. Fox, Philadelphia, Pa.

Apical margins of dorsal abdominal segments 2-4 or 5, greenish white.
Size large, 17 mm. or over in length; apex of hind tibiæ of ♂ not emarginate . . . . . **Nortoni** Cr.
Size medium, less than 15 mm. in length.
Dorsal abdominal segments of ♀ subopaque, not punctate, but feebly roughened or granulated, apex of hind femora of ♂ widely emarginate . . . . . **Robinsoni** Cr.
Dorsal abdominal segments of ♀ distinctly punctured, ♂ unknown. **punctata** n. sp.
Apical margins of dorsal abdominal segments not greenish white; entirely ferruginous, or ferruginous and black. Length 10—12 mm. **nevadensis** Cr.

Nomia punctata ♀.—Front and clypeus with rather strong, scattered punctures; front strongly impressed medially, dorsulum more strongly punctured than the front, very sparsely so on posterior portion; scutellum sparsely punctured, strongly impressed down the middle; metathorax with coarse, separated punctures, the enclosed transverse portion at base rugose. Abdomen shining; distinctly, sometimes coarsely punctured. Black; apical margins of dorsal abdominal segments 2-4, broadly greenish white. Head, thorax and legs, more or less clothed with grayish pubescence; tarsi testaceous, the first joint of hind tarsi within the bronzy pubescence. Wings subhyaline, apical margins fuscous, nervures and stigma dark testaceous. Length 10 mm.

Var. (?) A specimen has the punctures of the dorsulum and abdomen very strong and the tarsi black.

Three specimens, Denver, Col. (E. V. Beales), Vega S. Jose, N. Mex. (C. H. Tyler Townsend) and Big Stone City So. Dak., (J. F. Aldrich). Is at once distinguished from *Nortoni* by its small size and the rather densely pubescent thorax; from the Cuban species, *Robinsoni*, it is distinguished by the distinctly punctured abdomen.

———o———

A NEW OPHION.

By G. C. Davis, Agr. Coll. Mich.

I take pleasure in dedicating this new species of *Ophion* to Mrs. Annie T. Slosson, who bred the specimen from a dark cocoon of one of the larger species of *Acronycta* last season. The parasitized cocoon was taken in Connecticut.

Ophion slossonæ n. sp. ♂.—Length one inch, wing expanse one and five-eighths inches. Dark honey-yellow, except eyes, ocelli, tips of mandibles, tarsal claws and extremities of tarsal joints on posterior legs, which parts vary from dark brown to black. The wings are deep fuliginous with black veins, except at extreme base and the stigma, which are fulvous; the vein-stump in the cubito-discoidal cell comparatively long; glabrous spot small, opaque like rest of the wing, obscure; metathorax distinctly areolated. It has eight prominent ridges emanating from the extremity o the thorax, the two central ones and the outer pairs close together; these are crossed by two semicircular lines, the upper one abbreviated, and the lower one uniting with the outer radiating lines; petiole of the abdomen much lighter in color below the abrupt constriction than above. In other respects the species differs but little from *O. glabratum*, which it closely resembles in form and color.

One specimen in collection of Am. Ent. Society, Philadelphia. The fuliginous wings will at once distinguish the species.

Since naming the above I have received another ♂ specimen collected by Mr. French at Carbondale, Ill., in June. This shows the species to have quite a wide distribution. The specimen differs from the other only in having no black on the posterior tarsi, but all the tarsi and tibiæ a little lighter yellow.

———o———

THREE NEW AFRICAN BOMBYCIDS.

By W. J. HOLLAND, Ph.D., Pittsburgh, Pa.

SATURNIIDÆ.

BUNAEA Hüb.

1. **B. goodii** sp. nov. ♂.—In the form of wings and in size allied to *B. milfordi* Kirby, with the type of which I have compared it, but from which it differs very materially. Antennæ blackish. Front dark brown, with a conspicuous white spot at the base of each of the antennæ; the upperside of the thorax is dark fawn; the upperside of the abdomen pale fawn; the lowerside of the thorax and abdomen is pale fawn, inclining to whitish; the legs are dark brown; the primaries are fawn, except the outer margin, which is paler, inclining to whitish near the outer angle; the line of demarcation between this pale outer area and the darker body of the wing is straight, running from the costa a little before the apex to the inner margin nearly three-fourths of the distance from the base; there is an irregularly zigzagged basal line of dark brown and at the end of the cell a hyaline dot surrounded by a dark-brown ring defined externally by pale fawn; the secondaries have the ground color on the inner half of the wing as on the primaries; the costal margin is broadly laved with bright pink; the wing is marked by a very large ocellus, having a hyaline spot in the middle, the pupil being velvety-black, irrorated with bright blue scales about the middle; the iris is pale yellowish, very broad, and defined externally by a diffuse brownish line which coalesces with a transverse line running from the inner edge of the ocellus to the inner margin about the middle. On the underside the primaries are fawn, with the inner margin broadly reddish; at the end of the cell the ocellus of the upperside reappears, but more distinctly defined; the line separating the lighter marginal area from the darker inner area reappears upon the lowerside as a heavy brown line; the marginal tract on the lowerside is very little paler than the body of the wing; the underside of the secondaries is fawn, profusely marked with whitish scales on the basal half; there is a dark brown circular spot near the base, and a dark brown transverse line running from the outer angle to near the middle of the inner angle; the ocellus, which is so conspicuous upon the upperside of the posteriors, on the underside is obsolete, being indicated by the hyaline dot and a broad patch of whitish

scales one the basal side of which there is a lunulate brown mark; there is a very faint submarginal curved line of whitish scales shaded inwardly by pale brown. Expanse 4.5 inches.

Hab.—Kangwé, Ogové Valley.

GONIMBRASIA Butl.

2. **G. longicaudata** sp. nov. ♂.—Antennæ dark brown. Front blackish; at the base of each of the antennæ there is a pale reddish spot; the collar is reddish pink, margined posteriorly with blackish; the thorax is reddish pink; the upperside of abdomen is paler pink; the underside of the thorax and abdomen are reddish fawn; the legs are concolorous, margined externally with dark brown; the primaries on the upperside are reddish pink, with a patch of whitish scales about the middle of the cell and a similar patch below it nearer the base, and a hyaline spot at the end of the cell; there is a straight submarginal line running from the costa a little before the apex to a point on the outer margin a little before the inner angle; this dark line is defined externally by a broad white line and internally by a faint grayish line; both of these lines become diffuse near the apical extremity; the secondaries on the upperside are reddish pink upon the inner margin; the limbal area near the costa is clouded with blackish; there is a curved, whitish, obsolescent band beyond the base, followed by a conspicuous ocellus, the middle of which is accentuated by a hyaline dot; the iris is bright Naples yellow, margined with deep black and surrounded externally by a bright whitish ring; the submarginal line of the primaries is produced upon the secondaries as a transverse median band running from before the outer angle to the inner margin two-thirds of the distance from the base, but with the order of the colors in the line reversed; the outer half of the wing beyond this transverse line is darker than the rest of the wing; the outer margin is produced in the form of a very long and broad tail. On the underside both wings are reddish fawn with the outer margin of the primaries and the outer half of the secondaries separated from the body of the wing by heavy brown lines, beyond which the color of the wings is dark brownish; the hyaline spots of the upper surface reappear upon the lowerside feebly defined externally by whitish scales. Expanse 6.25 inches.

Hab.—Kangwé, Ogové Valley.

PINARIDÆ.

GONOMETA Walk.

3. **G. titan** sp. nov. ♀.—This remarkable insect is almost uniformly dark brown, with the apices of the primaries paler, the primaries being traversed by a transverse inner, transverse median, and transverse outer band of slightly darker cloudings; a very indistinct pale fawn dot appears at the end of the cell in the primaries. Expanse 7 inches.

Hab.—Kangwé, Ogové Valley.

What I take to be the male of this remarkable insect is a species bright fulvous in color, with the inner margins of the secondaries and the base of the primaries clouded with fuliginous. The expanse of the wings in the male is somewhat less than four inches. I cannot be certain of my reference of the male before me to the female, but it is the largest male in the genus, and in color comes sufficiently near to the female, of which I possess two fine examples, one of them ex-larva. The caterpillar producing this huge moth, the body of which in the case of the female exceeds in size that of any other of the African Saturniidæ known to me, is densely covered with short spines, which are extremely sharp and highly venomous. I was so unfortunate as to incautiously handle the cocoon, which is represented in the plate, and to receive some thrusts from the spines with which it is densely covered. The result was severe inflammation, a single point of contact becoming the centre of an inflamed spot as large as a silver dollar in diameter. This venomous property of the spines is persistent, though nearly five years have elapsed since the specimens came into my hands. The moth emerged on April 27, 1887.

EXPLANATION OF PLATE VIII.

Fig. 1. *Gonimbrasia longicaudata* sp. nov. ♂.
" 2. *Gonometa titan* sp. nov. ♀.
" 3. *Bunaea goodii* sp. nov. ♂.
" 4. Cocoon of *G. titan* ♀.

ERRATA.

Page 108, vol. iv, at end of second line from top, insert "The palpi are moderately large, porrect, compressed."

Page 106, eleventh line from top, for *Scopelodus* read *Scopelodes*.

Notes on LITHOSIIDÆ and ARCTIIDÆ with descriptions of new varieties.—I.

By B. NEUMOEGEN and HARRISON G. DYAR.

The following notes have accumulated, and are presented with the descriptions of certain forms which are worthy of distinctive names to save space in our revisionary work.

Family LITHOSIIDÆ.

Genus **TANTURA** Kirby.

1892, Kirby, Cat. Lep. Het. p. 86.
Penthetria Hy. Edw.
1881, Hy. Edw., Papilio i, 80.

Primaries 12-veined, median vein 4-branched; veins 3–5 straight, equidistant; cell closed; vein 6 arises below apex of cell; veins 7–9 on a stalk from apex of cell; vein 10 from the subcostal near apex of cell; vein 11 also from subcostal; 12 from base of wing. Secondaries 8-veined, two internal veins; median vein 3-branched; veins 3–4 on a stalk from lower angle of cell; cell closed; vein 5 arising below the middle of cell; veins 6–7 on a long stalk from apex of cell; vein 8 from subcostal below middle of cell, running straight to apex of wing. Antennæ simple, minutely ciliate.

Type *Penthetria majuscula* Hy. Edw.

Penthetria parvula Hy. Edw. does not belong to any family of the Macroheterocera.

Genus **CRAMBIDIA** Pack.

The venation is peculiar. Primaries: vein 1 is free; median 2-branched; vein 2 arising from the middle of the discal cell; arcuate at base; vein 3 is a continuation of the median, straight to outer margin of wing (veins 4–5 absent); cell closed, vein 6 at or below apex of cell; a small, roundedly triangular accessory cell, indifferently present or absent in the same species; when absent, veins 7–9 arise on a stalk from apex of discal cell, and vein 10 from the subcostal; when present, veins 7–9 arise from the end of the accessory cell and vein 10 from its base, or from its upper part; vein 11 arises from the middle of the subcostal vein; vein 12 from base of wing, running very close to vein 11, or actually united with it for a considerable distance. Secondaries: two internal veins; median 3-branched; vein 2 arises before middle of cell; veins 3–4 on a long stalk from lower angle of cell (vein 5 absent); cell weakly closed; veins 6–7 on a short stalk from apex of cell; vein 8 from subcostal at middle of cell.

Table of species:

Wings pale brown . . . . . **pallida** Pack.
Wings white.
  Head yellow, contrasting with body . . . **cephalica** G. & R.
  Head white, concolorous . . . . . **casta** Sanb.

Of the remaining species referred to *Lithosia* in Prof. Smith's list, *L. bicolor* Grote, may remain in the genus; the others are synonyms.

Family ARCTIIDÆ.

Crocota intermedia Graef.

Var. *parvula* n. var.

Differs from the typical form in the width of the black border of hind wings. In *intermedia* the border covers two-thirds of the wings; here, one-third or less.

Type, one ♀, in Mr. Neumoegen collection, caught by Mr. Bruce in western Colorado.

Mr. E. L. Graef has a similar specimen from Arizona.

Arachnis picta Pack.

Var. *citra* n. var.

The ground color of head, thorax, anal tuft of abdomen and primaries varies from light orange to lemon between the normal gray maculations. Fringes of both wings yellow. Abdomen, as well as secondaries, deep red with a purplish sheen.

It differs from the typical Californian insect by having the secondaries more distinctly subhyaline, especially in the males. Below, primaries lemon to light orange, especially so in basal space and along costa; along costa of secondaries an area of lemon, and the veins of males scaled with the same color. Abdomen light yellow. The most remarkable feature about this variation is that it is of a much larger size than the typical form. Expanse of wings: ♂, 50—51 mm.; ♀, 62—65 mm. Length of body: ♂, 12 mm.; ♀, 15—20 mm.

Types, males and females, in Mr. Neumoegen's collection.

Hab.—Western Colorado.

Mr. Bruce, who caught these charming insects and who suggested the varietal name, writes us as follows: "This form is found nearly on the western border of Colorado at low elevation (6000 feet), and is very constant in color. I have them even a little pinker and not quite so yellow. The ordinary form is not found at that place at all, yet it is common 120 miles east of there, and I have reared a good many from females taken in the Arkansas Valley, all being the ordinary form. It is so local and constant in color, it is surely worthy of a name."

Elpis rubra Neum.

Var. *danbyi* n. var.

Stalk of antenna bright red, pectinations black; hair of thorax brown, with a red tint. Abdomen yellow-brown. Wings translucent; primaries blackish brown, with many minute red hairs intermixed. Secondaries black; all tibiæ red on top, the thick hair at base of legs light brown; eyes blackish.

Type, one ♂, in Mr. Neumoegen's collection.

Named in honor of Mr. W. H. Danby, Victoria, B. C., from whom the specimen was received.

Genus **EUVERNA** n. gen.

Head retracted, palpi exceeding the front, eyes globose, naked; antennæ bipectinate in ♂, serrate in ♀; vestiture of hair and scales rather short and appressed. Abdomen exceeding secondaries by half its length; thorax moderately stout; abdomen of nearly even width throughout, slightly flattened toward the extremity; primaries elongate, two and a half times as long as broad, costa straight till beyond cell, then slightly rounded over apex: outer margin oblique; internal angle obtuse, not rounded. Secondaries small, trigonate, subcaudate in the ♂, costa convex, apical and anal angles rounded; hind tibiæ with two pairs of short conical spurs; anterior tibiæ unarmed at tip; vein 8 of secondaries leaves subcostal at about middle of cell, runs very close to it to the apex; veins 7-10 of primaries stalked out of end of cell, as in *Spilosoma*.

Type, *Seirarctia clio* Pack.

Genus **NEOARCTIA** n. gen.

Head much retracted, palpi short, not attaining the front, eyes naked, well sunken in the long hairy vestiture; antennæ of ♂ moderately bipectinated, females shortly so; thorax rather small, very hairy, abdomen exceeding secondaries, sometimes very much so; primaries more than twice as long as broad; costa slightly convex or straight, apices produced and rather pointed; outer margin convex, slightly oblique; interior angle gently rounded. Secondaries full and rounded; costa and outer margin convex, vestiture of the wings thin and subtranslucent. The venation is practically that of *Spilosoma*.

Type, *Antarctia beanii* Neum.

Arctia brucei Hy. Edw. is congeneric.

Genus **EUPREPIA** Ochs. (*Arctia* auct.)

E. virgo Linn.

Var. *citrinaria* n. var.

Differs from typical *virgo* in having the ground color of the secondaries entirely light yellow instead of red; the form is rare. The type is in Mr. Neumoegen's collection.

E. virguncula Kirby.

Var. *otiosa* n. var.

Two specimens in Mr. Dyar's collection differ from typical *virguncula* in having traces of the usual transverse lines, which are normally absent in the species. In one specimen there are enlargements on the median venules and subcostal vein, obsoletely connected, representing the outer (4th) line which would be straight if the markings were sufficiently continuous to form a line; in the other specimen there is a short bar in the cell between subcostal and median veins, representing the outer median (3d) line.

This form approaches the variety *complicata*. of *E. ornata*, which differs from the fully marked var. *acharia* (the ground form) in the absence of the basal half line (1st line) and the greater or less obsolescence of both inner and outer median (2d and 3d) lines, or even in the breaking up of the outer (4th) line. We cannot, however, follow Mr. Kirby in referring *complicata* Wlk. as a synonym of *virguncula*, for the species differ in several important characters, of which, perhaps, the most evident, is the heavy lining of the median vein in *virguncula*, as contrasted with the narrow, obsolescent marking in *complicata*, which leads to the disappearance of the vein linings in the form *ornata* Pack. Mr. Packard has wrongly identified *E. ornata*.

E. arge Sm. & Abb.

Var. *nervosa* n. var.

This curious form differs from typical *arge* in the absence of all transverse lines, even of the angular terminal (5th) line, while the hind wings are largely suffused with blackish. The veins on the fore wings are distinctly lined with flesh color, and the longitudinal submedian streak is present, forked at the end; the thoracic and abdominal parts are colored as in *E. arge*. There is a figure of this form in Mr. Strecker's unpublished plates of the Arctiidæ (Pl. viii, fig. 20) and examples in Mr. Neumoegen's

collection, but these latter retain part of the normal maculation of *E. arge* in the W mark, and traces of the outer tooth in the cell. The hind wings are largely blackish.

———o———

Synopsis of the North American species of Melecta.

By Wm. J. Fox, Philadelphia, Pa.

FEMALES.

Size large, 11–15 mm. in length.

Pubescence on thorax and ornation of abdomen tawny; tubercles on scutellum ending in a short tooth; fore wings, with exception of a pale spot at apex of submarginal and discoidal cells, fuscous throughout. **interrupta** Cr.

Pubescence on thorax and ornation of abdomen grayish-white; tubercles on scutellum ending in a long tooth; fore wings, except a spot in the median, first and second submarginals and third discoidal cells, and the broad apical margins hyaline . . **miranda** n. sp.

Size medium, less than 11 mm. in length.

Ornation on abdomen interrupted medially; first joint of flagellum shorter than the following two united . . . **californica** Cr.

Ornation of abdomen not interrupted medially, forming continuous, irregular, or dentate fascia; first joint of flagellum as long, or a little longer than the following two united . . **maculata** Cr.

MALES.

Size large, 11 mm. or over in length; pubescence of thorax and ornation of abdomen tawny . . . . . **interrupta** Cr.

Size medium, less than 11 mm. in length; pubescence, etc., pale.

Ornation of abdomen not covering the entire surface of the dorsal segments.

Fascia on abdomen interrupted medially; flagellum not, or very slightly thickened medially . . . . . **californica** Cr.

Fascia on abdomen not interrupted medially, forming continuous, irregular, or dentate bands; flagellum greatly thickened medially. **maculata** Cr.

Ornation of abdomen covering the entire surface of dorsal segments. **mucida** Cr.

Melecta miranda ♀.—Deep black; head, thorax on sides and beneath dorsulum anteriorly, scutellum more or less, coxæ and femora beneath, with long, grayish-white pubescence; on the anterior part of dorsulum enclosed by the pale hair and a spot between the tegulæ and scutellum composed of black pubescence; dorsulum rather coarsely punctured, the punctures a little stronger and more separated than in *interrupta*, scutellum very coarsely punctured, more so than in *interrupta*, pro-

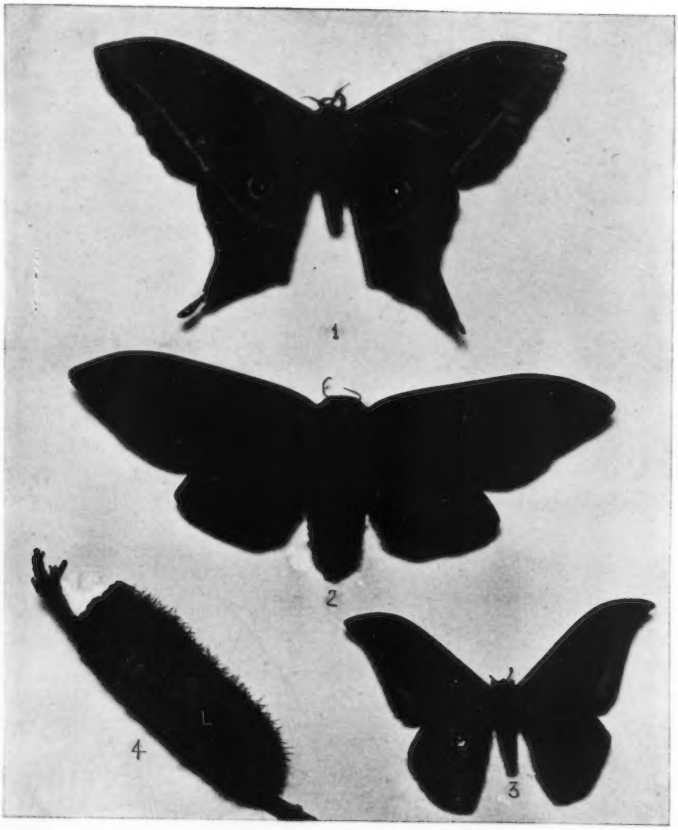
duced with two strong, rather elongate, widely separated teeth; apex of femora, outer side of tibiæ more or less and the tarsi with ashy pile, tegulæ reddish. Wings, with the apical margins, broadly, a spot in the median, first and second submarginal and the third discoidal cells fuscous; on each extreme side of dorsal abdominal segments 1–3 there is a large spot of pale pubescence, which is narrowly produced out on apical portion of segment to almost the middle as in *interrupta*, but the fascia are much narrower, the fourth and fifth segments with a transverse series of four spots, those on the fifth segment by far the smallest; last dorsal segment with elongate-triangular enclosure, which is divided by a strong, medial, longitudinal carina; the basal and lateral portions of the ventral segments finely and closely punctured. Length 12—15 mm.

Rapid City and Custer, S. Dak. (J. T. Aldrich). In general appearance resembles *Ericrocis lata;* also resembles *Melecta californica*, but is much larger. In the synoptical table here given of our species of *Melecta*, I have included *M.* (?) *mucida*, which, although possessing but two submarginal cells, is referable to *Melecta*. It is probably abnormal, as sometimes *Melecta californica* has but two submarginals in one wing, while in the other wing there is the usual number. *M. separata* and *edwardsii* are not included in the table, as they belong to *Bombomelecta*. This latter genus differs from *Melecta*, in addition to the characters given, by Patton, in having the tarsal claws cleft.

Mr. Jules Remy says, that on his arrival at Salt Lake, he observed upon the shore, on top of the salt, a deposit of a foot deep which was entirely composed of dead locusts,—*Œdipoda corallipes*. These insects, driven by a high wind in prodigiously thick clouds, had been drowned in the lake, after having, during the course of the Summer (1855), destroyed the rising crops, and even the prairie grass. * * * The Mormons, in their simple and picturesque descriptions, say that these insects are the produce of "a cross between the spider and the buffalo."

"In the year 1503," says Moufet, "Dr. Penny was called in great haste to a little village, called Mortlake, near the Thames, to visit two noble ladies, who were much frightened by the appearance of bug bites, and were in fear of I know not what contagion; but when the matter was known, and the insects caught, he laughed them out of all fear." This fact disproves the statement of Southall, that the *Cimeux lectularius* was not known in England before 1670, and that of Linnaens, and the generality of later writers, that this insect is not originally a native of Europe, but was introduced into England after the great fire of London in 1666, having been brought in timber from America. *Cowan, Curious Facts.*

ENTOMOLOGICAL NEWS for March was mailed March 3, 1893.



AFRICAN BOMBYCIDS (Holland.)

EXCHANGES

Not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at end of the column, and only when necessary those at the top (being longest in) are discontinued.

Coleoptera.—Price-lists wanted.—J. H. Bomberger, Box 76, Columbiana, O.

Lepidoptera.—Cocoons of *Attacus columbia* Smith to exchange for native lepidoptera, or for books on North American lepidoptera.—Robert H. Wolcott, Phi Delta Theta House, Ann Arbor, Mich.

Lepidoptera.—I am studying the Noctuid genera *Euclidia, Drasteria* and *Litosea*. Specimens bought, exchanged or determined.—M. V. Slingerland, Cornell Insectary, Ithaca, N. Y.

Lepidoptera.—Wanted to purchase cocoons and larvæ from different parts of U. S. State name and price.—E. J. Kruegeman, 54 May St., Lake View, Chicago, Ill.

Lepidoptera.—Wanted to exchange, papers on N. Am. Lepidoptera for Noctuidæ or Heterocera generally. Noctuidæ named for privilege of retaining desiderata.—John B. Smith, New Brunswick, N. J.

Coleoptera of N. Am. and Mexico wanted by purchase or exchange; large collection.—Fred. C. Bowditch, Tappan St., Brookline, Mass.

Lepidoptera.—Wanted, *Plusia balluca, metalliica* and *ampha;* also the Hydrœcias. Have some of the rarer eastern Noctuids for exchange.—Henry Bird, Rye, N. Y.

Coleoptera and **Hemiptera**, European and exotic, also postage stamps of Roumania, offered for American Hemiptera-Heteroptera unnamed.—A. L. Montandon, Strada Viilor filarete, Bucarest, Roumania.

Phryganidæ wanted; will exchange choice Coleoptera and Lepidoptera from Kansas, Colorado and New Mexico (Prof. F. H. Snow's collecting) for Caddice-flies, U. S. or exotic.—Vernon L. Kellogg, Univ. of Kansas Lawrence, Kansas.

Lepidoptera.—Good exchange or cash given for specimens of *Nadata doubledayi* Pack. Also wanted any of the rarer Notodontidæ and Limacæ.—Harrison G. Dyar, 599 Broadway, New York City.

Coleoptera.—I wish to obtain Entomological literature in any language, especially that treating of Coleoptera and for works not in my possession will give good insects from the West and from Alaska, mostly Coleoptera. —H. F. Wickham, Iowa City, Iowa.

Lepidoptera.—I have for exchange *C. semidea, A. montanus, S. modesta* (imagos and pupæ), and other White Mountain material. The rarer Sphingidæ preferred.—R. Ottolengui, 115 Madison Ave., N. Y.

Lepidoptera (diurnal) of Iowa to exchange for species of same order not in my collection.—Henry G. Willard, Grinnell, Iowa.

Coleoptera.—Price-lists wanted.—Dr. E. B. Stephens, Plymouth, Mass.

Cynipidæ.—Named or unnamed Cynipidæ wanted by purchase or exchange. Always accompany the flies with their galls when possible.—C. P. Gillette, Ft. Collins, Col.

Orthoptera.—For exchange: Mexican Lepidoptera, unmounted. for literature, in any language, on N. A. Orthoptera. Also Indiana Orthoptera for others from any part of N. A.—W. S. Blatchley, Terre Haute, Ind.

Orthoptera.—I desire to procure, by purchase, exchange, or for identification, specimens of the genus *Spharagemon* from all parts of the country. —Albert P. Morse, Wellesley College, Wellesley, Mass.

Lepidoptera.—Cocoons and pupæ of the rarer moths, *luna, imperialis, regalis, P. fraterna, P. pittecium*, etc.; also many fine set specimens; hybrids from *selene* et *luna, ceanothi* et *cecropia, Gloveri* et *cecropia*. List exchanged.—Emily L. Morton, Newburgh, N. Y. (New Windsor delivery).

Lepidoptera.—I will exchange or sell specimens (imagos or larvæ) from Illinois for those of other localities. Have on hand prepared sets of last year's collecting.—Arthur J. Snyder, North Evanston, Ill.

Lepidoptera.—Prepared larvæ, live pupæ, Coleoptera and Reptiles from America desired in exchange for species of Europe.—A Voelschow, Schwerin in Mecklinburg, Germany.

Lepidoptera, Coleoptera and **Hemiptera** of Colorado for exchange.—E. V. Beales, 1650 Larimer Street, Denver, Col.

Coleoptera for exchange: good species in perfect condition. Cicindelidæ, Endomychidæ and *Leptura* are especially wanted.—L. B. Walton, Box 123, Keuka College, Yates County, N. Y.

Lepidoptera.—I wish to exchange large, sound pupæ of *Cecropia* and *Polyphemus* for pupæ or imagines of almost any other species of Lepidoptera.—James Tough, 234 S. Water Street, Chicago.

Lepidoptera.—American diurnals wanted. Will buy or exchange. Hesperidæ and Lycænidæ especially desired.—Henry Skinner, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

Lepidoptera.—A few rare Indian Lepidoptera to exchange for rare species from the Northwest.—Levi W. Mengel, Reading, Pa.

Odonata.—Dragonflies. Species not in my collection wanted from all parts of the world. N. American species given in exchange, or named by special agreement.—P. P. Calvert, Acad. of Nat. Sciences, Phila., Pa.

Lepidoptera.—Imagines and pupæ of New England species for pupæ of *Megathymus yuccæ* and *Sphinx catalpæ*.—Field Brothers, Guilford, Ct.

Coleoptera and **Lepidoptera.**—I desire to exchange specimens with collectors in the South and West who wish to extend their collections; correspondence solicited.—F. W. Russell, M.D., Winchendon, Mass.

I am desirous of collecting in any of the Orders in Northwestern Ohio; write me.—N. Sager, Jr., Herring P. O., Allen Co., Ohio.

IN PREPARATION

A LIST OF ALL PERSONS INTERESTED IN THE

STUDY OF INSECT LIFE.

It is the desire of the undersigned to make as complete a List as possible of those persons in this country who are interested in the **study of INSECT LIFE.** Will the readers of **ENTOMOLOGICAL NEWS** kindly assist in the matter by sending us on postal cards the address of all such as are known to them in their vicinity, together with mention, if possible, of the Order or Orders in which they are specially interested?

Address:

J. H. RIDINGS, Secretary,
American Entomological Society,
P. O. BOX 248,
PHILADELPHIA, PA.

Entomological Forceps.

No. 1—Half Size.

No 2—Half Size.

No. 1, Price, Nickel Plated, each $2.50 | No. 2, Price, Nickel Plated, each $1.50
Sent by mail on receipt of price.

DISINFECTING CONES FOR ENTOMOLOGICAL CABINETS.
Price $1.00 per 100. Postage 10 cents.
Instruments of all kinds for Naturalists made to order.
BLAKE & CO., 55 N. Seventh Street, Philadelphia.

INSECT BOXES,

Cork lined, papered, 9 x 13 inches, absolutely tight, $1.00, with label holder $1.05. Of the size and style made for the U. S. National Museum $1.10. Special sizes to order at correspondingly low prices. Insect Cabinets, of all sizes, at reasonable prices. References for boxes and cabinets: U. S. National Museum, Brooklyn Entomological Society, and many others.

JOHN SCHMITT, 290 Third Ave., Brooklyn, N. Y.

INSECT PINS.

KLAEGER. *Standard make; bright or japanned.*

Sizes No. 00 to 5 in papers of 500 each; No. 6 and larger, 250 each. Sent postpaid to any part of the United States and Canada at $1.05 per thousand in original packages, at $1.25 in broken lots.

CARLSBADER. *Bright or japanned, same price as for* KLAEGER'S.

ENGLISH. *Short, for Micro-Lepidoptera*, per half ounce $1.52 postpaid (about 1450 in a package).

SHEET PEAT. ⅜ x 4 x 12, 53 cents per dozen, postpaid; $3.50 per gross. Express extra.

To colleges and other parties ordering in large quantities, I request the privilege of naming special rates.

Send 5 cent stamp for full illustrated catalogue to

M. ABBOTT FRAZAR,
93 SUDBURY STREET,
BOSTON, MASS.,

Taxidermist, and dealer in all kinds of Naturalists' Supplies.

P. C. STOCKHAUSEN, ENTOMOLOGICAL PRINTER 56 N. 7TH ST., PHILA. PA.

QUEEN & CO.,

INCORPORATED.

PHILADELPHIA,

Microscope Makers and Importers.

Microscopical Supplies of all kinds.

English Insect Pins, short and long, white and gilt, in 100's or 1000's.

Carlsbader Insect Pins, bright (see catalogue).

Schlueter Insect Pins, black (see calalogue).

Klaeger Insect Pins, white or black, standard length, 34 mm. In original packages of 500 each, $1.00 per thousand (postage extra).

(SPECIAL QUOTATIONS IN QUANTITIES.)

Sheet Cork,

Pinning Forceps,

Disinfecting Cones.

For full schedule of prices, see Catalogue B, which also describes Microscopes, etc.; will be sent on application.

LEPIDOPTERA WANTED.

I desire to obtain, either by purchase or exchange

RARE BUTTERFLIES AND MOTHS

from the Southern, Western and Northwestern parts of the United States in abundant numbers, as well as

Rare Butterflies, Sphingidæ, Bombycidæ, Saturninæ, Cossidæ and Hepialidæ from Asia, Australia, Africa and South America.

Most liberal terms granted.

B. NEUMOEGEN, 40 Exchange Place, New York, N. Y.

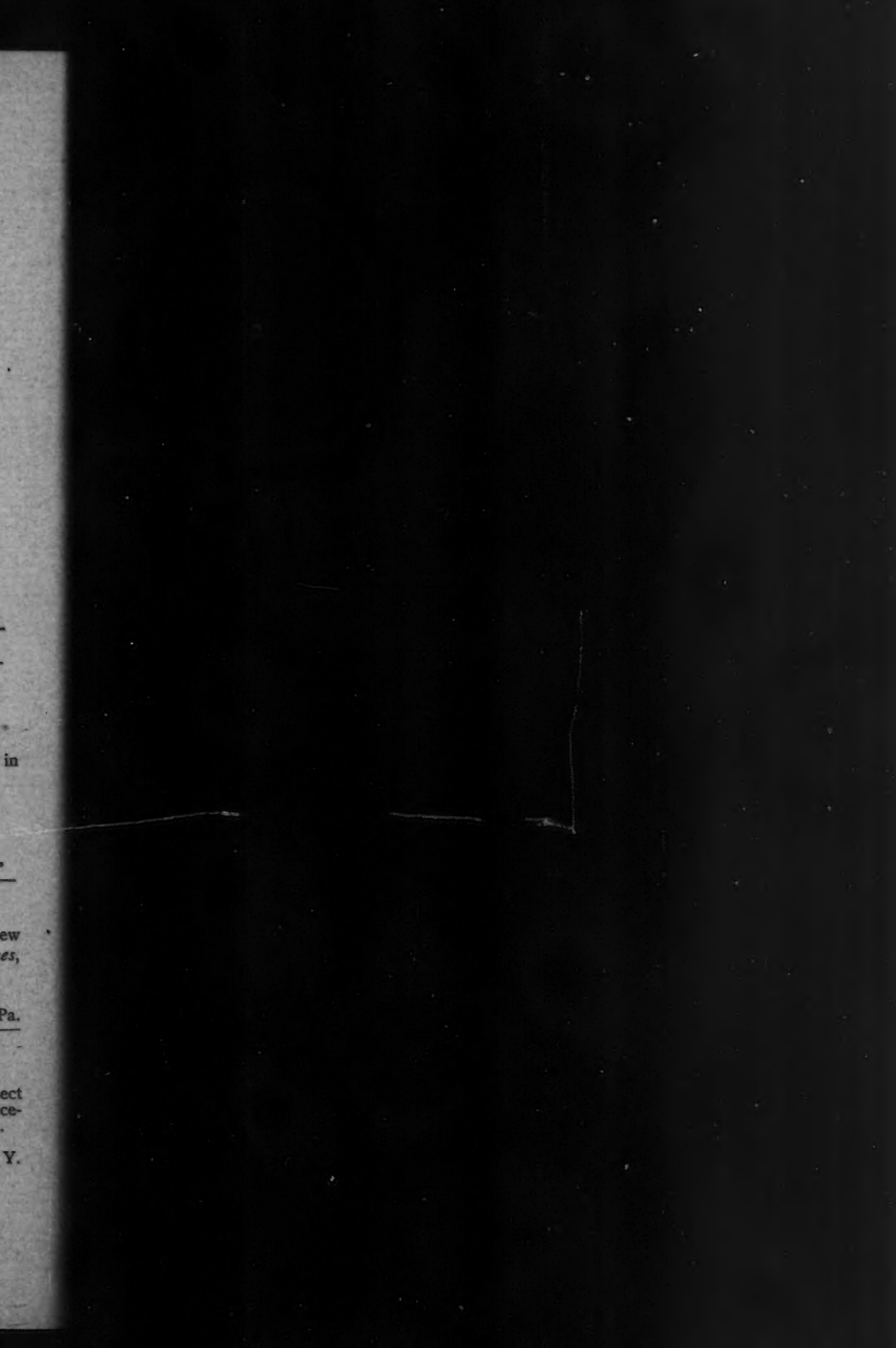
Pamphila and Catocala Wanted.

I will pay a good price in cash or exchange for **Pamphila** or **Catocala** new to my collection. For exchange: *Pamphila aaroni, panoquin, fusca, cernes, pontiac, hobomok, zabulon, otho* and many others.

PHILIP LAURENT,
1306 Chestnut Street, Philadelphia, Pa.

JOHN AKHURST,

TAXIDERMIST AND DEALER IN ENTOMOLOGICAL SUPPLIES.

Improved Entomological Forceps.

Fine Carlsbader Insect Pins a specialty. Price-list sent on application.
78 Ashland Place,
Brooklyn, N. Y.